IS READY ROMANIA FOR EURO ADOPTION? FROM STRUCTURAL CONVERGENCE TO BUSINESS CYCLE SYNCHRONIZATION

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The objective of this study is to identify gaps between economic and commercial structures between Romania and the euro area and to explain whether the results obtained justify recently decision to delay euro adoption beyond 2015. According to theory of optimum currency areas, the existence of similar economic structures, increasing trade integration and synchronization of business cycles with monetary union will provide greater symmetry of shocks between Romania and the euro area. If the shocks are more symmetrical, then common monetary policy of the European Central Bank will act as a tool to neutralize the shocks in the case of Romania, and the euro adoption would have fewer adverse effects. To meet the research objective, we have structured this paper into three parts. In the first part we referred to the importance of the proposed theme in the economic literature. In the second part, we used several statistical methods to identify how divergent is Romania relative to the euro area economies. The results obtained show increasing divergence between economic structures until 2009 year using the NACE 6 methodology. In fact, Romania has the most divergent structure in EU-27 countries, being characterized by lowest contribution of services to GDP. However, structural differences do not constitute an obstacle to euro adoption, as long as Romania becomes more commercially integrated with other European countries. Thus, Romania is the seventh economy in terms of trade with the EU-27 (73.3% of exports and 74.3% of imports), and the degree of convergence between the structure of exports and imports have increased significantly compared with 2000 year. In the third part, we estimated the degree of synchronization of business cycles between Romania and the euro area, based on Hodrick-Prescott filter. Results showed an increasing correlation of business cycles as a result of increasing industrial activity and export synchronization.

Keywords: euro area, sectoral divergence, business cycle synchronization, Krugman index, Hodrick-Prescott filter

Jel codes: E32, F15

Introduction

For economies that decide to be part of a Monetary Union, the most important cost is giving up monetary policy and exchange rate for its own internal objectives. This cost can be illustrated from the situation of a country that is affected by a restrictive economic shock (for example, increasing internal production costs). If this country not adopted a common currency, would be able to depreciate the currency in order to enhance competitiveness and neutralization of shock would be achieved more quickly. Therefore, the economy will be affected by economic shocks which it will offset more difficult and the cost of adopting a single currency will be higher. According to the theory of optimum currency areas (Mundell, 1961), the single monetary policy within the monetary union can substitute independent monetary policy if there are a similar shocks to the other member countries of the union. Otherwise, the single monetary policy of the

European Central Bank will generate more asymmetric shocks in euro area. The risk of shocks asymmetry increases especially in economies with structural divergence relative to euro area country. Even in the absence of economic convergence, it can be advantageous to join a monetary union, if that economy has other mechanisms which substitute independent monetary policy and offset the consequences of an asymmetrical economic shock. The functioning of these mechanisms is ensured usually by the existence of labour market flexibility. As well, enhancing of the trade linkages with monetary union countries can counterbalance to some extent the lack of structural convergence. Thus, commercial integration is one of the main mechanisms for more synchronization business cycles. According to Frankel and Rose (1998), the membership of the monetary union lead to an increasing correlation of business cycles, following more trade linkages. The more the commercial and financial relationships between the economic agents which belong to two economies are stronger, the more their impulse to adopt a mutual currency is higher. These economists argue that divergent economies with the euro area countries could adopt the euro single currency without much loss. This is called the endogenous optimum currency area, which means that a country will better meet the criteria for euro adoption ex post than ex ante. However, Krugman (1993) endorsed that the increase of the commercial relationships between two economies did not also generate symmetric shocks between them, as each economy will specialize in producing the goods which it can make more efficiently, that weakens the synchronization degree between the economies members. Also, entering the monetary union strengthens the correlation of business cycles only if the increase in foreign trade integration boosts inter-industry and not intra-industry foreign trade. This assumption is called the specializing hypothesis within the theory of the optimum currency area.

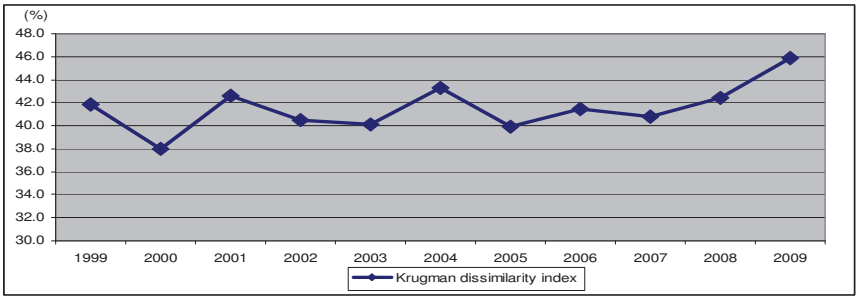
Sectoral divergence between Romania and euro area

If an economy has a sectoral structure (as measured by gross value added weights) less different than to euro area, then economic shocks will be more symmetrical and the costs of giving up the national currency will fall. The structure of the Romanian economy is very different from the EU members, and this situation will persist for a long time. Romania has a real urban distribution leads to a relatively low share of services in GDP achievement. Thus, despite high rates of economic growth by 2008, the share of services in GDP has not exceeded 50%, under a European average of over 70% of GDP. To highlight the differences between the sectoral structures of Romania and the euro area we used the dissimilarity index, proposed by Krugman, showing the distance relative between the economic structures of the Romania and the euro area.

$$\text{Krugman dissimilarity index}_{RO/EA} = \sum_{k=1}^{n} abs(s_{k,RO} - s_{k,EA}) \quad (1)$$

Where, s_k represents the share of sector k in total value added in Romania and euro area. The index takes value between 0 (perfect similarity) and 1 (maximum dissimilarity). The higher the index, the less similar are the economic structures of the Romania and euro area. In this paper, we have analyzed the degree of divergence between the economic structures of Romania and the euro area with 17 countries based on NACE 6 classification (Fig.no.1).

Figure 1.Sectoral divergence between Romania and euro area (NACE 6)



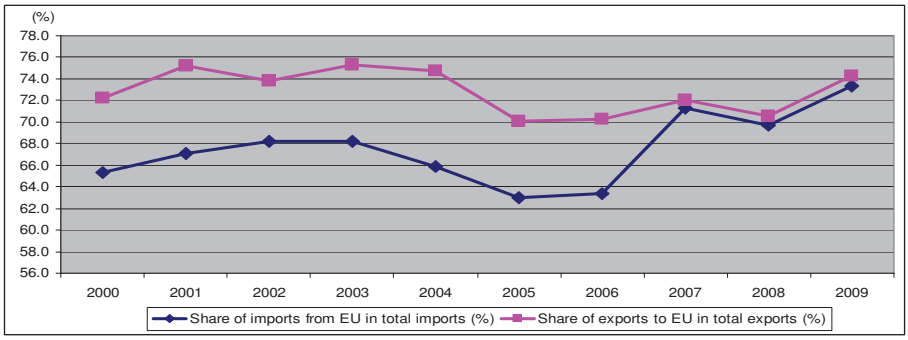
Data source: Eurostat (2011); our calculation

Romania has the most different structure of the economy compared with the euro area, following a relatively higher proportion of agriculture (over 4 times higher in 2009 year), industry (by about 10 percentage points over the reference in 2009), transport and trade (by about 4 percentage points higher in 2009), constructions (11% of GDP in 2009, compared with 6.3% in the euro area) and a lower share of the services sector (with 24 percentage points in 2009). The existence of a relatively higher proportion of industrial activity ensures a more rapid convergence process of the trade, since most of Romania's trade is made with industrial products. The contribution of agriculture to total gross value added decreased by half in 2009 compared with the year 1999, but this trend has not been accompanied by significant increase of labour productivity or exports. The boom of GDP in the period 2004-2008 was reflected at sectoral level by increase of the construction and trade shares, both leading to larger sectoral gap compared to euro area. The biggest differences between Romania and the euro area are in financial services and other services (including the public, education, health, etc.), Romania recording the lowest share of services in the EU-27.

Identifying the degree of trade integration

More than 85% of trade between Romania and the countries of the euro area is made with industrial goods, so that only the shocks which affect the industry in the euro area will transmit symmetrical/asymmetrical in the national economy. Consequently there will be a close correlation between developments in exports and industrial activity in the case of the two economies. Romania compensates the structural gaps o economy with a high commercial integration with the rest of the EU-27 countries, having the seventh share of imports and of exports with the EU-27. Accession to the European Union has generated increasing the share of exports at the level of 2004, while the share of imports increased by around 10 percentage points to 73,3% of the total in 2009, particularly as a result of the customs duties abolition and of poor competitiveness of agricultural and industrial goods produced (Fig.no.2).

Figure 2.Trade integration between Romania and EU-27



Data source: Eurostat (2011)

In the light of the adoption of the single currency becomes more important commercial integration with the euro area countries. In 2010, approximately 56% of exports and 53% of the imports were with these economies, but these values are declining compared to 2004, where approximately 60% of foreign trade was made with euro area countries. In 2010, five of the top ten countries of exports/imports destination were from the euro area (46.5% of total exports, i.e. 42% of total imports), demonstrating a high trade integration with the economies forming the core of the euro area. However, compared with 2004, the share of these economies in total exports was reduced by about 4.5 percentage points, due to the reduction of exports to Italy, with about 7.3% in 2010 (Table no.1).

Table1. The most important trading partners of Romania within the euro area

2004		**2007**		**2010**	
Share in total exports	Share in total imports	Share in total exports	Share in total imports	Share in total exports	Share in total imports
Italy – 21.2%	Italy – 17.2%	Italy – 17.1%	Germany – 17.2%	Germany – 18,3%	Germany – 16,8%
Germany – 15%	Germany – 14.9%	Germany – 16.9%	Italy – 12,7%	Italy – 13,9%	Italy – 11,6%
France – 8.5%	France – 7.1%	France – 7.7%	France – 6.3%	France – 8,4%	France – 6%
Netherlands – 3.2%	Austria – 3.5%	Austria – 2.6%	Austria – 4,8%	Spain – 3,1%	Austria – 4,1%
Austria – 3.1%		Spain – 2.3%	Netherlands – 3,6%	Netherlands – 2,8%	Netherlands – 3,5%
Total		**Total**		**Total**	
51%	**42.7%**	**46.6%**	**44.6%**	**46.5%**	**42%**

Data source: Department of External Trade, Romania

Given that about half of Romania's trade with EU-27 is done with the core of the euro area (Germany, France and Italy), then their macroeconomic developments will decisively influence the industrial activity and exports of the Romanian economy. Economic shocks that will affect these economies will be transmitted through trade in the Romanian economy and these will become more symmetrical. To show how sectoral and trade integration divergence between Romania and the euro area influence the nature of shocks affecting the two economies, we proceeded to determining the degree of synchronization of business cycles.

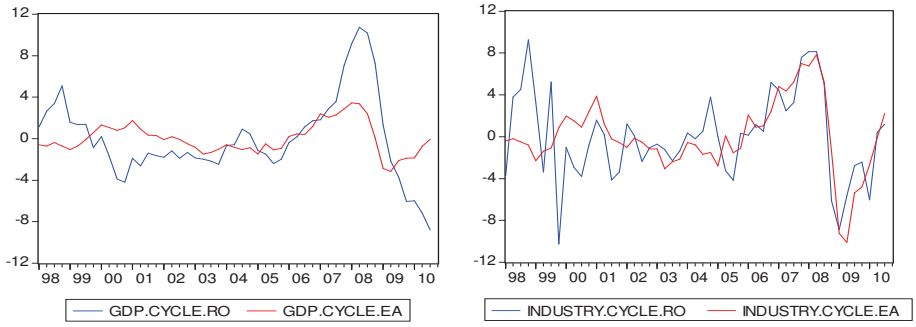
How correlated are business cycles between Romania and the euro area?

The economic literature does not use a single method to determine the business cycle and the correlation between them. In this study we have used the Hodrick-Prescott filter that has a number of limitations affecting the accuracy of final results. It uses an arbitrary choice of the smoothing parameter, being characterized by the lack of reliability of estimates at the beginning and the end of the sample. To determine the correlation between cyclical developments in the two economies have used the data series of GDP and of the gross added value of industrial activity, both being expressed in constant prices in the form of indices with fixed-base 2000 year. The

variables used were seasonally adjusted using the procedure Tramo-Seats from econometric software Eviews 6, each including 51 quarterly observations from 1998:1-2010:3, data source being Eurostat. We determined the business cycle based on both real GDP and industrial activity, as in Fig.no.3. Romania has recorded larger cyclical fluctuations than the euro area, as in the case of emerging countries, evidence of high sensitivity of the national economy to internal and external capital flows. In terms of business cycle determined by the evolution of GDP (the first graphic of Fig.no.3), Romania produced below potential over the period 2000-2005, the economic evolution being less favorable relative to the euro area. Since 2006 there has been an overheating of the Romanian economy, which was reflected in inflationary gap increased from 2% to 11% in just five quarters. Part of this evolution was explained by the increase in industrial activity (the second graph of figure below), which had also decreased the overall economy since Q2 2008.

Industrial activity has returned in the two economies at its potential level as a result of expansionist programs promoted in the euro area and of external demand increase. However, unlike the euro zone, the recovery of the Romanian industry has not generated improvement of the whole economy because were promoted a series of budgetary austerity measures have led to reductions in consumption and investment.

Figure 3.The business cycles in Romania and euro area



Source: Our estimations in Eviews 6

We have used Pearson correlation coefficient statistic to determine how much are synchronized the business cycles of the Romania and euro area. In the analysis we included Germany, because is the most important economy of the euro area (produces over 25% of euro area GDP) and is the main trading partner of Romanian economy. We found the degree of correlation between business cycles both for the whole period 1998-2010 Q3, but also for several sub-periods that correspond to the beginning of the period of economic expansion in Romania (2004 Q1) and of the first quarter of declining industrial production in Romania and in euro area (2008 Q2). The results obtained indicate that Romania has a similar correlation with Germany and with the euro area, because between these there is almost a perfect synchronization of business cycles. Romania recorded a higher correlation between business cycles based on industry than on the basis of GDP (except for sub-period (2004 Q1 -2008 Q2), as a result of trade interdependence with industrial goods. In fact, the economic crisis has spread through external sector, but this has ensured the return of Romanian industry at levels registered in 2007-2008. The maximum degree of correlation between business cycles (based on GDP) was recorded before the economic crisis (2004 Q1-2008Q2 sub-period), while between 1998 Q1-2003 Q4 Romania has characterized by a negative correlation with euro area /Germany (Table no.2). Return of Romanian industry since Q3 2009, but not recovery of the whole economy are reflected in the increasing correlation of business cycles based on industrial production (and not GDP) between 2004Q1-2010Q3 compared with 2004Q1-2008Q2.

Table 2.The correlation of business cycles between Romania and euro area/Germany

	Business cycles correlation (GDP)		Business cycles correlation (industry)	
	Romania and euro area	Romania and Germany	Romania and euro area	Romania and Germany
1998:1-2010:3	0.55	0.56	0.60	0.59
1998:1-2003:4	-0.40	-0.49	-0.11	-0.09
2004:1-2008:2	0.88	0.87	0.80	0.79
2004:1-2010:3	0.72	0.78	0.85	0.84

Source: Our estimations in Eviews 6.

Conclusions

The economic crisis was a test to euro adoption by Romania. Negative external shock has been transmitted in Romania through trade linkages and through foreign economic agents and monetary policy was not effective in neutralizing the impact of this shock. In other words, the economy could not benefit from an adjustment tool, like in situation in which it was part of monetary union. Romania has passed the test of the crisis (although he was the last of the new EU member states), but not by identifying other internal mechanisms for adjusting negative shock, but benefiting from an external channel adjustment (recovery of trading partner economies). However, this solution will not be available in all cases in which the Romanian economy will decrease. Therefore, the lack of internal solutions to neutralize the economic shock will extend their influence and will lead to higher costs of the euro adoption.

Note

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